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NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
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STATE OF NEVADA
Department of Conservation & Natural Resources
DIVISION OF ENVIRONMENTAL PROTECTION

Brian Sandoval, Governor
Leo M. Drozdoff, P.E., Director
Colleen Cripps, Ph.D., Administrator

October 30, 2014

Michael Rojo
Environmental Services, Supervisor
NV Energy
6226 W Sahara Ave M/S 30
Las Vegas, NV 89146

Re: **NV Energy (NVE)**
Reid Gardner Station (RGS)
NDEP Facility ID #H-000530
Nevada Division of Environmental Protection (NDEP) review of the *NV Energy Reid Gardner Station AOC – Muddy River/Geochemistry Workshop, October 7th-8th*, 2014, presentation prepared by Brad Bessinger, S.S. Papadopulos & Associates.

Dear Mr. Rojo:

At the request of NVE during the October 8, 2014 RGS work shop and project meeting, the NDEP is providing comments and proposed data gaps associated with the *NV Energy Reid Gardner Station AOC – Muddy River/Geochemistry Workshop, October 7th-8th*, 2014, presentation prepared by Brad Bessinger of S.S. Papadopulos & Associates on behalf of NVE. NDEP understands that NVE has requested these comments in an effort to better develop the geochemical CSM which will ultimately support the Muddy River Work Plan and the site-wide conceptual site model.

Please review the review comments from NDEP, located in Attachment A. Please contact me with any questions or comments about this letter at (775) 687-9396 or aoakley@ndep.nv.gov

Sincerely,

Alison Oakley, CEM
Environmental Scientist III
Bureau of Corrective Actions
NDEP-Carson City Office

ec: Jeff Collins, Nevada Division of Environmental Protection (NDEP)
Scott Smale, Bureau of Corrective Actions, NDEP Carson City
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cc: Alteha Tom, Moapa Band of Paiutes, Chairperson, P.O. Box 340, Moapa, NV 89025
Darren Daboda, Moapa Band of Paiutes, Environmental Director, P.O. Box 340, Moapa, NV 89025
Clark County Emergency Management, 500 S. Grand Central Parkway 6th Floor, P.O. Box 551713, Las Vegas, NV 89155-1713
Anitha Rednam, Department of Water Resources, 1416 9th Street, Room 1140, Sacramento CA 95814

Attachment A

Review of the *NV Energy Reid Gardner Station AOC – Muddy River/Geochemistry Workshop, October 7th-8th, 2014, presentation prepared by Brad Bessinger, S.S. Papadopulos & Associates.*

1. As mentioned in the Preliminary List of Conceptual Site Model (CSM) Data Gaps, aquifer adsorption capacity needs to be better understood to support future Site cleanup decisions. Aquifer adsorption capacity should be characterized with physical measurements (as opposed to theoretical modeling estimates), such as sequential leach testing.

2. Slides 7-9. These constituent summary tables are helpful for understanding magnitude of constituent concentrations at different Site locations. Please include summaries for chloride, sodium, iron, manganese, nitrate, dissolved or total organic carbon, and pH as these are also important constituents to include in the geochemical CSM. It would also be helpful to include comparison criteria for categories such as aquatic life, livestock watering, irrigation, drinking water, etc., so the reader can more readily understand which constituents are or are not above relevant screening levels.

3. Slide 9. Based on the data presented in this table, there appears to be potential for phosphorus loading from the Site as indicated by increasing phosphorous concentrations in Muddy River surface water between sampling locations MR-UP and MR-4. Phosphorus is an important constituent due to its potential to contribute to eutrophication of surface water. Please include a more thorough discussion of the occurrence of phosphorous in the final geochemical CSM report, and an assessment of phosphorus loading as part of the Muddy River Work Plan.

4. Slides 11/12 – Include MR4 location on this set of plots; 1, 2, and 3 are depicted.

5. Slide 22. When evaluating potential attenuation mechanisms for Site COCs, consider the effects of dilution as the potential primary attenuation mechanism, i.e., the relative difference between pond water and underlying groundwater for non-conservative constituents compared with conservative constituents (assuming decreases in generally conservative constituents are due to dilution) can provide an initial estimate of the effects of attenuation by dilution for different COCs. B, F, P, and Se may be attenuating more rapidly compared w/TDS & SO_4, indicating additional attenuation beyond dilution likely is occurring.

6. Slide 22. Consider during CSM development that manganese oxidation kinetics may be slow resulting in the potential for longer range transport of manganese in groundwater and surface water. Verify that manganese oxidation is occurring with empirical data.

7. Slide 25 – Data appear to cluster as three main populations for shallow groundwater and deep groundwater. Provide assessment of spatial distribution of samples within these clusters.

8. Slide 38 (and subsequent) – While the geochemical and transport models are "preliminary and un-calibrated", if this type of modeling is used to support decisions regarding site remedies, please include sensitivity analyses of input parameters to highlight which uncertainties most greatly impact model predictions.

9. Slide 34. Consider potential for competition between arsenic and phosphorus for anion sorption sites on mineral surfaces – phosphate (PO_4) is more strongly sorbed than the arsenic species arsenate and arsenite. Would potential sorption competition adversely affect groundwater arsenic concentrations? Provide evaluation of potential for arsenic sorption competition by phosphate.